excellent in display definition and long-term reliability since the displacement of light emission points and the creeping discharge accompanying the static electricity can be restricted due to the spacer.

IN THE CLAIMS:

Please add new Claims 43-84 to read as follows.

43. (New) An electron beam apparatus comprising a hermetic container which includes an electron source having electron emission devices and targets exposed to the electrons emitted from said electron source and further comprising a first member within said hermetic container,

wherein the value of the incident angle multiplication coefficient of secondary electron emission coefficient m_0, which is a parameter of the following formula:

$$\frac{\delta_\theta}{\delta_0} = \frac{1 - \left\{1 - \dfrac{m_0\cos\theta}{1 + (m_1)^{-1} \times (m_0\cos\theta)^{m_2}}\right\}\exp(-m_0\cos\theta)}{1 - \left\{1 - \dfrac{m_0}{1 + (m_1)^{-1} \times m_0^{m_2}}\right\}\exp(-m_0)} \times \frac{1}{\cos\theta}$$

General Formula (1)

is 10 or less, when obtaining it from the value of secondary electron emission coefficient measured under the conditions that incident energy is 1 k eV and incident angle is 0 degree as well as the values measured under the conditions that incident energy is 1 k eV and incident angles θ are 20, 40, 60 and 80 degrees by conducting a regression analysis by the least square method in said general formula (1),

provided that the second electron emission coefficient of the surface of said first member has two incident energies which satisfy the second electron emission coefficient $\delta = 1$ under the vertical incident conditions, and that when the larger energy of the above two energies satisfying $\delta = 1$ is referred to as a second cross-point energy, the secondary electron emission coefficients for the primary electrons whose incident angles are θ and 0 degrees are represented by

δ_θ, δ_0, respectively, and

m_1, m_2 have the values

$m_1 = 0.68273$

$m_2 = 0.86212$, respectively,

in the incident energy equal to or lower than the second cross-point energy,

wherein said first member is provided with an uneven geometry at least on a part of its surface, said uneven geometry being arranged at least in two directions on the surface.

44. (New) An electron beam apparatus comprising a hermetic container which includes an electron source having electron emission devices and targets exposed to the electrons emitted from said electron source and further comprising a first member within said hermetic container,

wherein the value of the incident angle multiplication coefficient of secondary electron emission coefficient m_0, which is a parameter of the following formula:

$$\frac{\delta_\theta}{\delta_0} = \frac{1 - \left\{1 - \dfrac{m_0 \cos\theta}{1 + (m_1)^{-1} \times (m_0 \cos\theta)^{m_2}}\right\} \exp(-m_0 \cos\theta)}{1 - \left\{1 - \dfrac{m_0}{1 + (m_1)^{-1} \times m_0^{\,m_2}}\right\} \exp(-m_0)} \times \frac{1}{\cos\theta}$$

General Formula (1)

is 10 or less,

when obtaining it from the value of secondary electron emission coefficient measured under the conditions that incident energy is 1 k eV and incident angle is 0 degree as well as the values measured under the conditions that incident energy is 1 k eV and incident angles θ are 20, 40, 60 and 80 degrees by conducting a regression analysis by the least square method in said general formula (1),

provided that the second electron emission coefficient of the surface of said first member has two incident energies which satisfy the second electron emission coefficient δ = 1 under the vertical incident conditions, and that when the larger energy of the above two energies satisfying δ = 1 is referred to as a second cross-point energy, the secondary electron emission coefficients for the primary electrons whose incident angles are θ and 0 degrees are represented by

δ_θ, δ_0 respectively, and

m_1, m_2 have the values

$m_1 = 0.68273$

$m_2 = 0.86212$, respectively,

in the incident energy equal to or lower than the second cross-point energy,

wherein said first member is provided with an uneven geometry at least on a part of its surface, said uneven geometry constituting of the amplitudes of at least two kinds of unevenness.

45. (New) An electron beam apparatus comprising a hermetic container which includes an electron source having electron emission devices and targets exposed to the electrons emitted from said electron source and further comprising a first member within said hermetic container,

wherein the value of the incident angle multiplication coefficient of secondary electron emission coefficient m_0, which is a parameter of the following formula:

$$\frac{\delta_\theta}{\delta_0} = \frac{1 - \left\{ 1 - \dfrac{m_0 \cos\theta}{1 + \left(m_1\right)^{-1} \times \left(m_0 \cos\theta\right)^{m_2}} \right\} \exp\left(-m_0 \cos\theta\right)}{1 - \left\{ 1 - \dfrac{m_0}{1 + \left(m_1\right)^{-1} \times m_0^{\ m_2}} \right\} \exp\left(-m_0\right)} \times \frac{1}{\cos\theta}$$

General Formula (1)

is 10 or less,

when obtaining it from the value of secondary electron emission coefficient measured under the conditions that incident energy is 1 k eV and incident angle is 0 degree as well as the values measured under the conditions that incident energy is 1 k eV and incident angles θ are 20, 40, 60 and 80 degrees by conducting a regression analysis by the least square method in said general formula (1),

provided that the second electron emission coefficient of the surface of said first member has two incident energies which satisfy the second electron emission

coefficient $\delta = 1$ under the vertical incident conditions, and that when the larger energy of the above two energies satisfying $\delta = 1$ is referred to as a second cross-point energy, the secondary electron emission coefficients for the primary electrons whose incident angles are θ and 0 degrees are represented by

δ_θ, δ_0, respectively, and

m_1, m_2 have the values

$m_1 = 0.68273$

$m_2 = 0.86212$, respectively,

in the incident energy equal to or lower than the second cross-point energy,

wherein said first member is provided with an uneven geometry at least on a part of its surface, said uneven geometry constituting of the cycles periods of at least two kinds of unevenness.

46. (New) A spacer, wherein the value of the incident angle multiplication coefficient of secondary electron emission coefficient m_0, which is a parameter of the following formula:

$$\frac{\delta_\theta}{\delta_0} = \frac{1 - \left\{1 - \dfrac{m_0 \cos\theta}{1 + (m_1)^{-1} \times (m_0 \cos\theta)^{m_2}}\right\} \exp(-m_0 \cos\theta)}{1 - \left\{1 - \dfrac{m_0}{1 + (m_1)^{-1} \times m_0^{m_2}}\right\} \exp(-m_0)} \times \frac{1}{\cos\theta}$$

General Formula (1)

is 10 or less,

when obtaining it from the value of secondary electron emission coefficient measured under the conditions that incident energy is 1 k eV and incident angle is 0 degree as well as the values measured under the conditions that incident energy is 1 k eV and incident angles θ are 20, 40, 60 and 80 degrees by conducting a regression analysis by the least square method in said general formula (1), provided that the second electron emission coefficient of its surface has two incident energies which satisfy the second electron emission coefficient $\delta = 1$ under the vertical incident conditions, and that when the larger energy of said two energies satisfying said condition $\delta = 1$ is referred to as a second cross-point energy, the secondary electron emission coefficients for the primary electrons whose incident angles are θ and 0 degrees are represented by

δ_θ, δ_0, respectively, and

m_1 , m_2 have the values

$m_1 = 0.68273$

$m_2 = 0.86212$, respectively,

in the incident energy equal to or lower than the second cross-point energy,

wherein said first member is provided with an uneven geometry at least on a part of its surface, said uneven geometry being arranged at least in two directions on the surface.

47. (New) A spacer, wherein the value of the incident angle multiplication coefficient of secondary electron emission coefficient m_θ, which is a parameter of the following formula:

$$\frac{\delta_\theta}{\delta_0} = \frac{1 - \left\{1 - \dfrac{m_0 \cos\theta}{1 + (m_1)^{-1} \times (m_0 \cos\theta)^{m_2}}\right\} \exp(-m_0 \cos\theta)}{1 - \left\{1 - \dfrac{m_0}{1 + (m_1)^{-1} \times m_0^{\,m_2}}\right\} \exp(-m_0)} \times \frac{1}{\cos\theta}$$

General Formula (1)

is 10 or less,

when obtaining it from the value of secondary electron emission coefficient measured under the conditions that incident energy is 1 k eV and incident angle is 0 degree as well as the values measured under the conditions that incident energy is 1 k eV and incident angles θ are 20, 40, 60 and 80 degrees by conducting a regression analysis by the least square method in said general formula (1), provided that the second electron emission coefficient of its surface has two incident energies which satisfy the second electron emission coefficient $\delta = 1$ under the vertical incident conditions, and that when the larger energy of said two energies satisfying said condition $\delta = 1$ is referred to as a second cross-point energy, the secondary electron emission coefficients for the primary electrons whose incident angles are θ and 0 degrees are represented by

δ_θ, δ_0, respectively, and

m_1, m_2 have the values

$m_1 = 0.68273$

$m_2 = 0.86212$, respectively,

in the incident energy equal to or lower than the second cross-point energy,

wherein said first member is provided with an uneven geometry at least on a part of its surface, said uneven geometry constituting of the amplitudes of at least two kinds of unevenness.

48. (New) A spacer, wherein the value of the incident angle multiplication coefficient of secondary electron emission coefficient m_0, which is a parameter of the following formula:

$$\frac{\delta_\theta}{\delta_0} = \frac{1 - \left\{ 1 - \dfrac{m_0 \cos\theta}{1 + (m_1)^{-1} \times (m_0 \cos\theta)^{m_2}} \right\} \exp(-m_0 \cos\theta)}{1 - \left\{ 1 - \dfrac{m_0}{1 + (m_1)^{-1} \times m_0^{m_2}} \right\} \exp(-m_0)} \times \frac{1}{\cos\theta}$$

General Formula (1)

is 10 or less,

when obtaining it from the value of secondary electron emission coefficient measured under the conditions that incident energy is 1 k eV and incident angle is 0 degree as well as the values measured under the conditions that incident energy is 1 k eV and incident angles θ are 20, 40, 60 and 80 degrees by conducting a regression analysis by the least square method in said general formula (1), provided that the second electron emission coefficient of its surface has two incident energies which satisfy the second electron emission coefficient δ = 1 under the vertical incident conditions, and that when the larger energy of said two energies satisfying said condition δ = 1 is referred to as a second cross-point energy, the secondary electron emission coefficients for the primary electrons whose incident angles are θ and 0 degrees are represented by

δ_{θ}, δ_0, respectively, and

m_1 , m_2 have the values

$m_1 = 0.68273$

$m_2 = 0.86212$, respectively,

in the incident energy equal to or lower than the second cross-point energy,

wherein said first member is provided with an uneven geometry at least on a part of its surface, said uneven ~~geometry~~ constituting of the cycles periods of at least two kinds of unevenness.

49. (New) An electron beam apparatus comprising a hermetic container which includes an electron source having electron emission devices and targets exposed to the electrons emitted from said electron source and further comprising a first member within said hermetic container,

wherein said first member is provided with an uneven geometry at least on a part of its surface, said uneven geometry being arranged at least in two directions on the surface.

50. (New) An electron beam apparatus comprising a hermetic container which includes an electron source having electron emission devices and targets exposed to the electrons emitted from said electron source and further comprising a first member within said hermetic container,

wherein said first member is provided with an uneven geometry at least on a part of its surface, said uneven geometry constituting of the amplitudes of at least two kinds of unevenness.

51. (New) An electron beam apparatus comprising a hermetic container which includes an electron source having electron emission devices and targets exposed to the electrons emitted from said electron source and further comprising a first member within said hermetic container,

wherein said first member is provided with an uneven geometry at least on a part of its surface, said uneven geometry constituting of the cycles periods of at least two kinds of unevenness.

52. (New) An electron beam apparatus according to any one of claims 43, 46, and 49,

wherein the direction along which said uneven geometry is arranged is random.

53. (New) An electron beam apparatus according to any one of claims 44, 47, and 50,

wherein the amplitudes of said uneven geometry is random.

54. (New) An electron beam apparatus according to any one of claims 45, 48, and 51,

wherein the cycle periods of said uneven geometry is random.

55. (New) An electron beam apparatus according to any one of claims 1, 27, 45, 48, 49, 50, and 51,

wherein said first member has a roughing film.

56. (New) The electron beam apparatus according to claim 43, wherein the incident angle multiplication coefficient of secondary electron emission coefficient m_0 on the surface of said first member is 5 or less in the incident energy equal to or lower than said second cross-point energy when obtaining it from the value of secondary electron emission coefficient measured under the conditions that incident energy is 1 keV and incident angle is θ degree as well as the values measured under the conditions that incident energy is 1 keV and incident angles θ are 20, 40, 60 and 80 degrees by conducting a regression analysis by the least square method in said general formula (1).

57. (New) The electron beam apparatus according to claim 43, wherein said first member comprises a substrate provided with an uneven geometry at least on a part of its surface and a film coating said uneven geometry portion, the thickness of said film being smaller than the height difference between the top and lowest portions of the uneven geometry of said substrate

58. (New) The electron beam apparatus according to claim 43, wherein said first member is provided with an uneven geometry at least on a part of its surface, said uneven geometry being formed in such a direction that the incident angle dependency of

said secondary electron emission coefficient is reduced for any of the orbits of the electron beam from the above electron source as well as of the electron beam reflected on said target side.

59. (New) The electron beam apparatus according to claim 43, wherein said first member is provided with an uneven geometry at least on a part of its surface, said uneven geometry being formed in all directions parallel to the surface of said first member.

60. (New) The electron beam apparatus according to claim 43, wherein said first member is provided with an uneven geometry at least on a part of its surface, said uneven geometry having the average cycle of 100 μm or shorter.

61. (New) The electron beam apparatus according to claim 43, wherein said first member is provided with an uneven geometry at least on a part of its surface, said uneven geometry having the average cycle of 10 μm or shorter.

62. (New) The electron beam apparatus according to claim 43, wherein said first member is provided with an uneven geometry at least on a part of its surface, said uneven geometry having the average roughness ranging from 0.1 μm to 100 μm.

63. (New) The electron beam apparatus according to claim 43, wherein said first member is provided with an uneven geometry at least on a part of its surface, said

uneven geometry being obtained by removing the material surface of said first member nonuniformly.

64. (New) The electron beam apparatus according to claim 43, wherein said first member is provided with a film at least on a part of its surface, said film having a sheet resistivity of 10^7 [Ω/□] to 10^{14} [Ω/□].

65. (New) The electron beam apparatus according to claim 43, wherein said first member is provided with a film at least on a part of its surface, said film containing at least one kind of metal, carbon, silicon, or germanium and consisting of nitride, oxide or carbide.

66. (New) The electron beam apparatus according to claim 43, wherein said first member is provided with a film at least on a part of its surface, said film, when being formed on a smooth substrate so as to have a smooth surface, having a composition which provides secondary electron emission coefficient of 3.5 or less measured under vertical incident conditions.

67. (New) The electron beam apparatus according to claim 43, wherein said first member is provided with a film at least on a part of its surface, the surface of said film having a high oxygen concentration as compared with the inside thereof.

68. (New) The electron beam apparatus according to claim 43, wherein said first member is provided with a film at least on a part of its surface, said film being

formed by any one of the following methods: sputtering, vacuum deposition, wet printing, spraying, or dipping.

69. (New) The electron beam apparatus according to claim 43, wherein said first member abuts said electron source, said first member having a first film provided at least on a part of its surface and a conductive film provided on the portion where said first member and said electron source abut with each other, said first film and said conductive film being in contact with each other.

70. (New) The electron beam apparatus according to claim 43, wherein said first member abuts an electrode provided within said hermetic container for controlling the electrons emitted from said electron source, said first member having a first film provided at least on a part of its surface and a low resistive film provided on the portion where said first member and said electrode abut with each other, said first film and said low resistive film being in contact with each other.

71. (New) The electron beam apparatus according to claim 43, wherein said first member is a spacer.

72. (New) The electron beam apparatus according to claim 43, further comprising an electrode for controlling the electrons emitted from said electron source.

73. (New) The electron beam apparatus according to claim 72, wherein the voltage applied between the electron emission device contained in said electron source and said electrode is 3 kV or higher.

74. (New) The electron beam apparatus according to claim 72 or claim 73, wherein said first member is provided with a film at least on a part of its surface, said film being electrically connected to both of said electron source and said electrode.

75. (New) The electron beam apparatus according to claim 43, wherein said electron source includes cold cathode devices as an electron emission device.

76. (New) The electron beam apparatus according to claim 43, wherein said target produces images when being exposed to electrons.

77. (New) The electron beam apparatus according to claim 43, wherein said target is provided with a fluorescent substance.

78. (New) The electron beam apparatus according to claim 26, wherein said first member is provided with a film at least on a part of its surface, said film having a sheet resistivity of 10^7 [Ω/□] to 10^{14} [Ω/□].

79. (New) The electron beam apparatus according to claim 26, wherein said first member is provided with a film at least on a part of its surface, said film

containing at least one kind of metal, carbon, silicon, or germanium and consisting of nitride, oxide or carbide.

80. (New) The electron beam apparatus according to claim 26, wherein said first member is provided with a film at least on a part of its surface, the surface of said film having a high oxygen concentration as compared with the inside thereof.

81. (New) The electron beam apparatus according to claim 26, wherein said first member is provided with a film at least on a part of its surface, said film being formed by any one of the following methods: sputtering, vacuum deposition, wet printing, spraying, or dipping.

82. (New) The electron beam apparatus according to claim 26, wherein said first member abuts said electron source, said first member having a first film provided at least on a part of its surface and a conductive film provided on the portion where said first member and said electron source abut with each other, said first film and said conductive film being in contact with each other.

83. (New) The electron beam apparatus according to claim 26, wherein said first member abuts an electrode provided within said hermetic container for controlling the electrons emitted from said electron source, said first member having a first film provided at least on a part of its surface and a low resistive film provided on the